

rerun

#14/ K.T. 1600  
12/31/01RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/486,757DATE: 12/27/2001  
TIME: 11:30:01Input Set : A:\J&J1673seqlist.txt  
Output Set: N:\CRF3\12272001\I486757.rawRaw  
Seq  
Listing

3 <110> APPLICANT: Kutchan, Toni  
4 Zenk, Meinhart  
5 Atkins, David  
7 <120> TITLE OF INVENTION: Cytochrome P450 Reductases from Poppy Plants  
9 <130> FILE REFERENCE: J&J 1673  
11 <140> CURRENT APPLICATION NUMBER: US 09/486757  
C--> 12 <141> CURRENT FILING DATE: 2000-02-28  
14 <150> PRIOR APPLICATION NUMBER: AU.P08872  
15 <151> PRIOR FILING DATE: 1997-08-29  
17 <160> NUMBER OF SEQ ID NOS: 32  
19 <170> SOFTWARE: PatentIn version 3.0  
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24 <213> ORGANISM: Papaver somniferum  
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34 <213> ORGANISM: Papaver somniferum  
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38 1 5 10 15  
40 Glu Lys  
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45 <212> TYPE: PRT  
46 <213> ORGANISM: Papaver somniferum  
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50 1 5 10 15  
52 Glu Lys  
55 <210> SEQ ID NO: 4  
56 <211> LENGTH: 8  
57 <212> TYPE: PRT  
58 <213> ORGANISM: Papaver somniferum  
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66 <212> TYPE: PRT  
67 <213> ORGANISM: Papaver somniferum  
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70 Lys Asp Phe Thr Glu Val Ala Lys

ENTERED

see page 5

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Input Set : A:\J&amp;J1673seqlist.txt

Output Set: N:\CRF3\12272001\I486757.raw

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84 <212> TYPE: PRT
85 <213> ORGANISM: Papaver somniferum
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101 <211> LENGTH: 21
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122 attatgggtt cgaataattt agctaattcg attgaatcga tgtaggaat atcaatagga      180
124 tcagaatata tttctgaccc aattttcatt atggtcacaa ctgtagcttc aatgctgatt      240
126 ggatttggtt tcttcgcatg tatgaaatct tcgtcttctc aatcaaaaacc tattgaaact      300
128 tataaaccaa taattgataa agaagaagag gagattgaag ttgatcctgg taaaattaag      360
130 ctactatat tttttggtac tcagactggg actgctgaag gatttgctaa ggcattggca      420
132 gaagaaatta aggcaaagta caagaaagca gttgttaaag tagttgacct ggatgactat      480
134 gcagccgagg atgatcaata tgaagagaaa ttaaagaaag agtctttggt gtttttcatg      540
136 gtagccactt atggtgatgg tgagccaact gacaatgctg cgagatttta caaatgggtc      600
138 actcaggaac atgaaagggg agagtggctt cagcaactaa cttatggtgt ttttggtttg      660
140 ggtaaccgtc aatacgagca tttcaacaag atcgcggtag atgtggatga gcaactcgtt      720
142 aaacaagggtg caaagcgcat tgttcaagtg gggctcgggt acgatgatca atgcattgaa      780

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148 gtgattcacg aaactacggg cgcggctctg gatgataaac acataaatac tgctaacggc 960
150 gatgttgcac ttgatattct ccattccttg agaaccattg ttgctcaaca aagagagctc 1020
152 caaaaaccca agtctgatag atcctgtata catctggagt tcgacatata aggcctcttc 1080
154 cttacatatg agactggaga tcatgttggg gtttatgctg agaactgcga tgaaactgtc 1140
156 gaggaagcag ggaagctgtt gggtaacccc ctggatttgc tgttttcaat tcacacggat 1200
158 aaagaagacg ggtcacccca ggaagctca ttaccacctc ctttcccagg tccttgcacc 1260
160 ttacgatctg ccctagcacg ctatgctgat cttttgaatc ctctagaaa ggcttctctg 1320
162 attgctctgt ccgctcatgc atctgtaccc agtgaagcag agagattgcg ctttttgtca 1380
164 tcacctctgg gaaagaatga gtattcaaaa tgggtagtgt gaagtcagag gagtcttttg 1440
166 gagatcatgg ccgagtttcc atcagcaaaa cccctcttg gtgtgttctt tgctgcagta 1500
168 gcccctcgct taccgcctcg atactattct atctcactct ctccaaagtt tgctccctca 1560
170 agaattcatg tgacgtgtgc tttagtatat ggtcaaagcc ctaccggaag ggttcaccga 1620
172 ggagtgtgtt cgacatggat gaagcatgca gttcctcagg atagctgggc tcctattttt 1680
174 gttcgaacgt caaacttcaa gttaccagct gacccctcaa ctccaattat catgggtggga 1740
176 cctggtacag ggttagctcc tttcagagga tttctgcagg aaagaatggc cctcaaggaa 1800
178 aatggtgctc aacttggccc agcagtgtct ttttccggat gtaggaatcg taatatggac 1860
180 ttcatttatg aagacgaact aaacaacttc gtggaacgag gagtcatttc ggagctagtt 1920
182 attgcctttt cagtgaaagg ggaagaagg gaatatgttc aacataagat gatggagaaa 1980
184 gcaacggatg tatggaatgt gatatcaggg gacggttatc tctatgtgtg tgggtgatgc 2040
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194 gattcttctc ccagtggttc caaatcgaag ctcggtataa ttgagagcag tgcaattgtg 2340
196 actacatgag aagcaaacat cgaataccat agaattagaa agatcaaaat tctcttatca 2400
198 gaacaatgtt acaggcaaaa ctgtgtttgc ttaatatata tttcacacca tgggtgtgga 2460
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202 gatcttctct ttggattgat tactgtaagt tctaaccaga tgatagattg tacttaaaga 2580
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2649

209 &lt;210&gt; SEQ ID NO: 11

210 &lt;211&gt; LENGTH: 2558

211 &lt;212&gt; TYPE: DNA

212 <213> ORGANISM: *Eschscholzia californica*

W--&gt; 213 &lt;400&gt; SEQUENCE: 11

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220 aaaactatgg aacaaactgc ggttaaagtc tctttgtttg atctattttc ttcgatactt 180
222 aatggaaagt tggatccgtc gaacttttct tcagattcaa gtgctgctat tttgattgaa 240
224 aatcgtgaga ttttaattgat ctttaacaact gctattgctg tttttatcgg ttgtggtttt 300
226 ctctacgttt ggagaagatc ttcaataaag tcgagtaaaa ttgttgaaac tcagaaattg 360
228 atcgttgaaa aggaaccaga acctgaagtt gatgatggaa agaagaaggt tactatcttc 420
230 tttggtactc aaactggtac agctgaagga ttcgcaaagg cacttgctga agaagcaaaa 480
232 gcaagatatg aaaaggcaat ctttaaagtg attgatctgg atgattacgg agcagatgat 540
234 gatgaattcg aagagaaatt gaaaaaggaa actatagctc ttttcttttt ggctacctat 600
236 ggagatggtg aacctacaga taatgctgca agattttata aatggttcac agaggggaga 660
238 gagggaaatg tggctccaga atcttcaatt tgggtgtctc ggtctaggca atagacagta 720

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Input Set : A:\J&amp;J1673seqlist.txt

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244  gtggcgggag ttggtatggc ctgaattgga tcagttgctc cttgatgaaa gtgataaaac 900
246  atctgtttct actccttaca ctgccatcgt accagaatac agggtagtat tccatgatgc 960
248  tactgatgca tcactacaag acaaaaaactg gagcaatgca aatggctaca ctgtttacga 1020
250  cgttcaacac ccatgcagag ccaatgtcgt tgtaaagaag gagcttcaca ctccagtatc 1080
252  tgatcgtttt tgtattcatc tgggaatttga catttctggc actgggctca cgtatgaaac 1140
254  aggagaccat gtcggtgttt actctgagaa ttgtgttgaa gttgtcgagg aagcagagag 1200
256  gctattgggt tactcatcag acaccgtttt ttcaatccat gtcgataaag aggacggctc 1260
258  acccattagt ggaagcgctc tagctcctcc ttttccaact cctgcactc taagaacagc 1320
260  actaacacga tacgtgatc tgttgaattc tccaagaag gctgctctgc atgctttggc 1380
262  tgcttatgca tccgatccaa aggaagcgga gcgactaagg tatcttgctg ctctgctgg 1440
264  gaaggacgaa tacgcccagt ggatagtagc tagtcagaga agtctgctag tggtcatggc 1500
266  tgaattccca tcagcaaagg ctccaattgg ggttttcttt gcagcagtag ctctcgctt 1560
268  gctgccaaga tactattcta tttcatcttc caataggatg gtacatcta ggattcatgt 1620
270  cacatgtgca ttggtgcatg aaaaaacacc ggcaggctcg gttcacaaag gagtgtgttc 1680
272  aacctggatg aagaattctg tgtctttgga agaaaacat gattgcagca gctgggcacc 1740
274  aatctttgtc aggcaatcca acttcaaact tctgctgat tctacagtac caattataat 1800
276  gattggtcct gggactggat tagctccctt taggggattc atgcaggagc gattagctct 1860
278  gaagaattct ggtgtagaat tgggaccgcg tctctcttc tttggatgca gaaacagaca 1920
280  gatggattac atatatgaag aggagctaaa caactttgtg aaagaggag ctatctccga 1980
282  agttgttgtt gctttctcac gtgagggagc taccaaggaa tacgtacaac ataaaatggc 2040
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286  tgatgccaa ggcattggct gagacgtaca tcgaactctc cacaccattg cccaggaaca 2160
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294  ttatatactt gaggtagcgg acattaatcc ttttctctct ctctaaactg ttaatctgt 2400
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306  <213> ORGANISM: Papaver somniferum
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314  attatgggtt cgaataattt agctaattcg attgaatcga tgttaggaat atcaatagga 180
316  tcagaatata tttctgaccc aattttcatt atggtcacaa ctgtagcttc aatgctgatt 240
318  ggatttggtt tcttcgcatg tatgaaatct tcgtcttctc aatcaaaacc tattgaaact 300
320  tataaaacca taattgataa agaagaagag gagattgaag ttgactctgg taaaattaag 360
322  ctactatat tttttgttac tcagactggg actgctgaag gatttgctaa ggcattggca 420
324  gaagaaatta aggcaaagta caagaaagca gttgttaaag tagttgacct ggatgactat 480
326  gcagccgagg atgatcaata tgaagagaaa ttaaagaaag agtctttggg gtttttcatg 540
328  gtagccactt atgggtgatg tgagccaact gacaatgctg cgagatttta caaatggttc 600
330  actcaggaac atgaaagggg agagtggctt cagcaactaa cttatgggtg ttttggtttg 660
332  ggtaaccgtc aatacgagca tttcaacaag atcgcggtag atgtggatga gcaactcgg 720
334  aaacaagggtg caaagcgcat tgttcaagtg gggctcgggt acgatgatca atgcattgaa 780

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340 gtgattcacg aaactacggg cgcggtctcg gatgataaac acataaatac tgctaacggc      960
342 gatgttgcac ttgatattct ccatccttgc agaaccattg ttgctcaaca aagagagctc     1020
344 cacaaaccca agtctgatag atcctgtata catctggagt tcgacatata aggctcttcc     1080
346 cttacatatg agactggaga tcatgttggg gtttatgctg agaactgcga tgaaactgtc     1140
348 gaggaagcag ggaagctgtt gggtaacccc ctggatttgc tgttttcaat tcacacggat     1200
350 aaagaagacg ggtcacccca gggaagctca ttaccacctc ctttcccagg tccttgcacc     1260
352 ttacgatctg ccctagcacg ctatgctgat cttttgaatc ctctagaaa ggcttctctg     1320
354 attgctctgt ccgctcatgc atctgtaccc agtgaagcag agagattgcg ctttttgtca     1380
356 tcacctctgg gaaagaatga gtattcaaaa tgggtagttg gaagtcagag gagtcttttg     1440
358 gagatcatgg ccgagtttcc atcagcaaaa cccctcttgc gtgttttctt tgctgcagta     1500
360 gcccctcgct taccgcctcg atactattct atctcatcct ctccctaagt tgctccctca     1560
362 agaattcatg tgacgtgtgc tttagtatat ggtcaaagcc ctaccggaag ggttcaccga     1620
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366 gttcgaacgt caaacttcaa gttaccagct gacccctcaa ctccaattat catggtggga     1740
368 cctggtacag ggtagctcc tttcagagga tttctgcagg aaagaatggc cctcaaggaa     1800
370 aatggtgctc aacttggccc agcagtgtct ttttccggat gtaggaatcg taatatggac     1860
372 ttcatttatg aagacgaact aaacaacttc gtggaacgag gagtaatttc ggagctagtt     1920
374 attgcctttt cagtggaagg ggaaaagaag gaatatgttc aacataagat gatggagaaa     1980
376 gcaacggatg tatggaatgt gatatcaggg gacggttata tctatgtgtg tggtagtgc     2040
378 aagggaatgg ccagagatgt ccatcgacag ttgcatacca ttgcccaga acagggaccc     2100
380 atggaatcat ctgctgccga agctgcagta aagaaactcc aagttgaaga acgatatacta     2160
382 agagatgtct ggtgatcgaa tgtagcttgc caagtccct tttcttggct ggtctgttta     2220
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386 gattcttctc ccagtgttcc caaatogaag ctcggtataa ttgagagcag tgcaattgtg     2340
388 actacatgag aagcaaacat cgaataccat agaattagaa agatcaaaat tctcttatca     2400
390 gaacaatgtt acaggcaaaa ctgtgtttgc ttaatatataa tttcacacca tgggtgtgga     2460
392 caaactgaa acagtattag ctataccaac aaagttatgc aaggaaacac aaactagtta     2520
394 gatcttctct ttggattgat tactgtaagt tctaaccaga tgatagattg tacttaaaga     2580
396 ttcttgtttt cttatggcta ccgagaggag tatattaatg catttagagt tttgagaaaa     2640
398 aaaaaaaaaa                                     2650

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401 &lt;210&gt; SEQ ID NO: 13

402 &lt;211&gt; LENGTH: 683

403 &lt;212&gt; TYPE: PRT

404 &lt;213&gt; ORGANISM: Papaver somniferum

W--&gt; 405 &lt;400&gt; SEQUENCE: 13

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412           20          25          30
414 Thr Val Ala Ser Met Leu Ile Gly Phe Gly Phe Phe Ala Cys Met Lys
415           35          40          45
417 Ser Ser Ser Ser Gln Ser Lys Pro Ile Glu Thr Tyr Lys Pro Ile Ile
418           50          55          60
420 Asp Lys Glu Glu Glu Glu Ile Glu Val Asp Pro Gly Lys Ile Lys Leu
421 65          70          75          80
423 Thr Ile Phe Phe Gly Thr Gln Thr Gly Thr Ala Glu Gly Phe Ala Lys
424           85          90          95

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Use of n and / or Xaa has been detected in the Sequence Listing. Review the Sequence Listing to ensure a corresponding explanation is present in the <220> to <223> fields of each sequence using n or Xaa.

## VERIFICATION SUMMARY

DATE: 12/27/2001

PATENT APPLICATION: US/09/486,757

TIME: 11:30:02

Input Set : A:\J&amp;J1673seqlist.txt

Output Set: N:\CRF3\12272001\I486757.raw

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L:35 M:283 W: Missing Blank Line separator, <400> field identifier  
L:47 M:283 W: Missing Blank Line separator, <400> field identifier  
L:59 M:283 W: Missing Blank Line separator, <400> field identifier  
L:68 M:283 W: Missing Blank Line separator, <400> field identifier  
L:77 M:283 W: Missing Blank Line separator, <400> field identifier  
L:86 M:283 W: Missing Blank Line separator, <400> field identifier  
L:95 M:283 W: Missing Blank Line separator, <400> field identifier  
L:104 M:283 W: Missing Blank Line separator, <400> field identifier  
L:116 M:283 W: Missing Blank Line separator, <400> field identifier  
L:213 M:283 W: Missing Blank Line separator, <400> field identifier  
L:307 M:283 W: Missing Blank Line separator, <400> field identifier  
L:405 M:283 W: Missing Blank Line separator, <400> field identifier  
L:542 M:283 W: Missing Blank Line separator, <400> field identifier  
L:636 M:283 W: Missing Blank Line separator, <400> field identifier  
L:775 M:283 W: Missing Blank Line separator, <400> field identifier  
L:853 M:283 W: Missing Blank Line separator, <400> field identifier  
L:989 M:283 W: Missing Blank Line separator, <400> field identifier  
L:1069 M:283 W: Missing Blank Line separator, <400> field identifier  
L:1839 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:27  
L:1875 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:28  
L:1893 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29  
L:1911 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30  
L:1971 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31  
L:2031 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:32